STATE OF TENNESSEE

Justin P. Wilson
Comptroller

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Memorandum

To: Honorable Bill Haslam, Governor
Honorable Tre Hargett, Secretary of State
Honorable Justin P. Wilson, Comptroller of the Treasury
Honorable David H. Lillard, Jr., Treasurer
Honorable Larry Martin, Commissioner of Finance and Administration

From: William Wood, Budget Analyst, Comptroller of the Treasury

Date: March 10, 2016

Re: Economic Report to Governor

Tennessee Code Annotated (TCA) § 9-4-5202 requires the State Funding Board (the Board) to secure estimates of Tennessee's economic growth from the Tennessee econometric model at least once a year. These estimates are published annually in the Economic Report to the Governor by the the University of Tennessee's Center for Business and Economic Research (CBER). The Report includes data for Tennessee and the United States as a whole, using indicators such as nominal personal income, employment, inflation, consumer spending, and the housing market.

The statute also requires the Board to comment on the "reasonableness" of CBER's projections, and provide different estimates, if necessary. As specified in TCA § 9-4-5201, the rate of Tennessee's economic growth is based on the projected changes of the state's personal income.

The Comptroller's staff assists the Board by evaluating information on current economic conditions and trends provided by commonly referenced sources in economic forecasting.

Conclusion:

CBER's 2016 Economic Report predicts that Tennessee nominal personal income will grow by 4.90 percent in fiscal year 2016, 4.77 percent in calendar year 2016, and 4.67 percent in calendar year 2017. Compared with various economic forecasts, trends in the world economy, and historical Tennessee growth, the Report's estimates are not unreasonable.

Staff Commentary

CBER's Economic Report predicts Tennessee nominal personal income will grow by 4.77 and 4.67 percent in calendar years 2016 and 2017, respectively.[1] On a fiscal year timeline, personal income is expected to increase by 4.9 percent in fiscal year 2016 and 3.3 percent in fiscal year 2017.[2]

Over the past year, CBER's estimates have been close to actual results. The 2015 Report projected a 4.24 percent increase in personal income in calendar year 2015.[3] The revised figures from the 2016 Report puts growth for calendar year 2015 at 4.66 percent, an increase of 0.42 percent over the projection.[4] As last year's forecasts were within 50 basis points of the original estimates, this year's projections may be similarly accurate.

Exhibit 1 summarizes the 2016 Report's forecasts for the next several years.

Exhibit 1: Estimated Tennessee Personal Income Growth

Forecast Year	Report Year 2016
Calendar Year 2015	4.66%
Calendar Year 2016	4.77%
Fiscal Year 2016	4.90%
Calendar Year 2017	4.67%
Fiscal Year 2017	3.30%

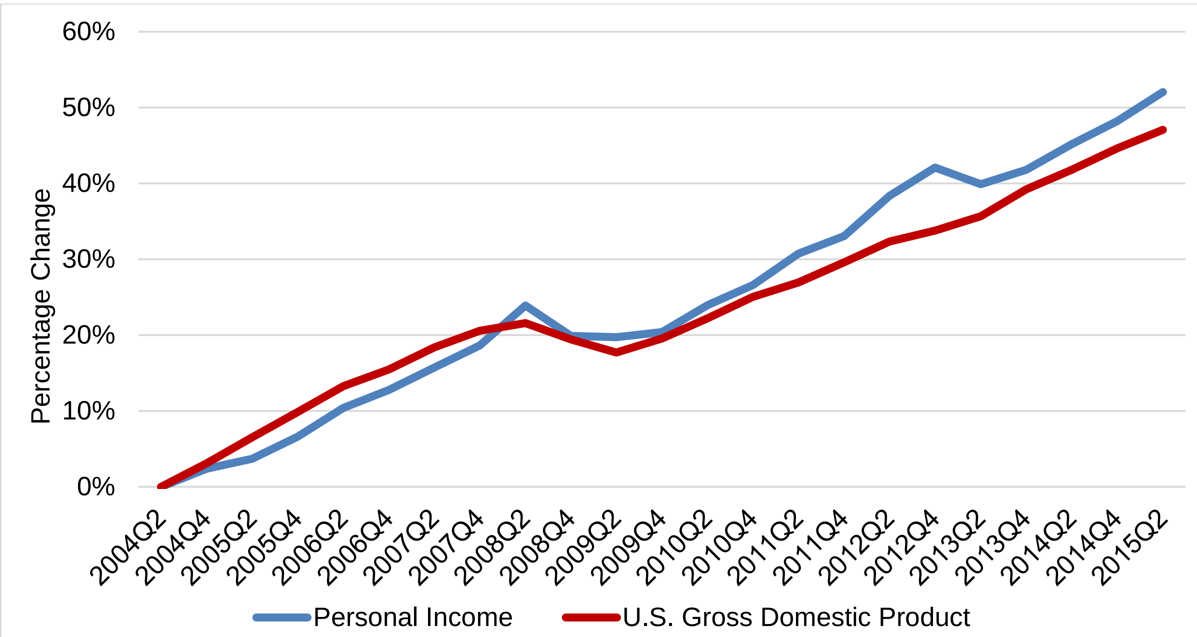
Source: Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016.

[1] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, Appendix A, p. 2.
[2] Ibid., p. ix.
[3] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2015,* Center for Business and Economic Research, University of Tennessee, January 2015, p. 25.
[4] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 29.

Comparison of the Economic Report to Leading Economic Forecasting Sources

Historically, the growth of Tennessee nominal personal income has mirrored changes in U.S. Gross Domestic Product (GDP). Exhibit 2 compares the relative growth of Tennessee personal income and U.S. GDP over the last decade.

Exhibit 2: Relative Growth of Tennessee Personal Income and U.S. GDP



Source: United States Bureau of Economic Analysis, www.bea.gov (accessed January 2016).

Few agencies estimate growth in Tennessee personal income, making it difficult to directly compare CBER's projections. Because Tennessee income closely tracks growth in GDP, however, Comptroller staff uses GDP as a general predictor of Tennessee personal income. As positive GDP growth is predicted in the next several years, staff expects Tennessee personal income will increase as well. Exhibit 3 includes the Economic Report's projections for various measures of growth, including GDP, personal income, unemployment, and inflation.

In 2015, U.S. GDP increased at an annual rate of 2.4 percent. The economy grew more quickly in the 3rd quarter, with GDP rising by 2.0 percent.[5] In the 4th quarter, however, personal consumption expenditures (PCEs) and nonresidential fixed investment did not grow as rapidly as projected, and GDP growth slowed to 1.0 percent.[6]

[5] Ibid., p. 2.
[6] United States Bureau of Economic Analysis, Gross Domestic Product: Fourth Quarter and Annual 2015 (Second Estimate), February 26, 2016, http://www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm (accessed Mar. 7, 2016).

Decreases in private inventory investments, nonresidential fixed investments, and exports suppressed GDP growth. Additionally, imports, which are subtracted from GDP calculations, increased, further restraining GDP growth.

Nevertheless, increased PCEs, residential fixed investment, and federal government spending outweighed other decreases, contributing to the overall 2.4 percent GDP increase.

Exhibit 3: Economic Report Forecast Summary By Calendar Year

Indicator	2016	2017
US Real GDP Growth	2.65%	2.94%
TN Real GDP Growth	2.25%	2.15%
US Nominal Personal Income Growth	4.16%	5.17%
TN Nominal Personal Income Growth	**4.77%**	**4.67%**
US Unemployment Rate	4.90%	4.90%
TN Unemployment Rate	5.50%	5.40%
Consumer Price Index	1.21%	2.56%

Source: Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016.

To consider the "reasonableness" of CBER's projections, staff compares GDP estimates of various economic forecasting agencies. CBER's estimates fall within the range – thus, the Report's 2016 projections do not appear unreasonable.

Exhibit 4: Government and Non-Government Forecasts

Forecaster	CY 2016	CY 2017	Date
Congressional Budget Office	2.7	2.5	January 2016
Fannie Mae	2.2	2.2	January 2016
Freddie Mac	2.5	2.3	January 2016
Raymond James	2.5	2.4	January 2016
Global Insight	2.7	3.0	December 2015
Federal Reserve Bank	2.4	2.2	December 2015
Royal Bank of Canada	2.3	2.7	February 2016
Moody's	2.3	2.5	February 2016
High	**2.7**	**3.0**	
Median	**2.5**	**2.5**	
Low	**2.2**	**2.2**	
CBER	**2.7**	**2.9**	**January 2016**

Forecast Risks

China

China's economic situation is a major concern for the current global economy. In terms of purchasing power parity, its economy is the largest in the world: in 2014, China's GDP was $17.2 trillion, while U.S. GDP was $16.6 trillion.

Over the last decade, China's economy has grown tremendously – in one year, GDP grew 14 percent. Recently, however, China's economic growth has slowed, and is estimated to drop to 6.5 percent in 2015.[7]

The International Monetary Fund warned of "spillover effects" from China's slowdown, after Chinese officials reported 6.8 percent growth in 2015.[8] China's loss of momentum has presented challenges to the global economy on two fronts: currency devaluation and decreased demand.

To compensate for slower economic growth, the Chinese government devalued its currency twice within the last year. While this boosted Chinese exports, imports to China became more expensive and declined. This spurred recessions in several of China's trading partners, including Russia, Canada, and Brazil.

In addition to currency devaluation, the slowing Chinese economy has also affected emerging markets. During China's meteoric growth, it had a voracious demand for commodities, such as steel and coal – commodities exported by many emerging markets. To build capacity and meet Chinese demand, many of these markets took on debt when credit was cheap.

As Chinese growth slowed, however, China's demand for these commodities declined, putting emerging markets' debt at risk. And, with U.S. interest rates rising and the dollar growing stronger, these markets' dollar denominated debt continues to become more expensive. Consequently, as China's economic growth weakens, emerging markets are struggling to service their debt with their declining revenues.

Global Economic Slowdown

The global downturn is not limited to emerging markets. Some advanced economies, such as the European Union, have more exposure to China and emerging markets than the United States. Through these partnerships, the effects of China's slowdown spread to advanced economies, leading to tighter financial conditions throughout the world.

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[7] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 13.
[8] Star Online, "Slowdown in Chinese Growth Risks Global Collateral Damage," January 20, 2016, http://www.thestar.com.my/business/businessnews/2016/01/20/slowdowninchinesegrowthrisksglobalcollateraldamage (accessed Feb. 26, 2016).

The U.S., through its contact with other advanced markets, faces contagion risk – low global growth could induce disinflation internationally. In 2015, Citigroup predicted 2016 global growth in advanced economies at 2.4 percent; as the decline cycle continued, Citigroup revised that estimate to 1.6 percent, and warned that actual growth "could well be lower."[9]

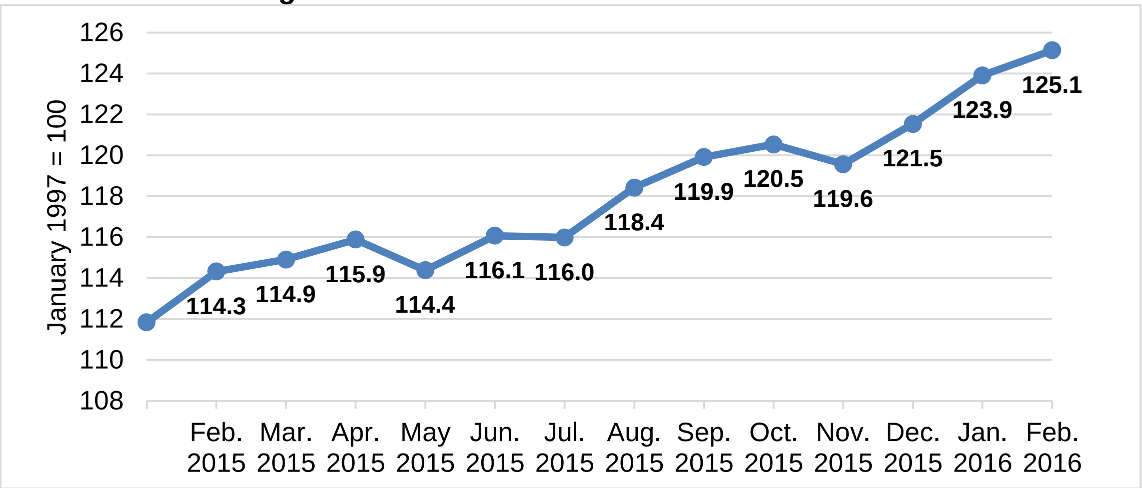
U.S. Dollar Appreciation

Over the last year, the value of the U.S. dollar has risen about 9.5 percent.[10] The dollar's appreciation is not necessarily as promising as it seems, however; rising dollar values may negatively impact the U.S. economy in three ways. First, a strong dollar makes U.S. imports less attractive – rather than buying goods from the United States, foreign companies either buy less, or purchase the same goods more cheaply from other countries with more advantageous exchange rates.

Second, global commodities are priced in U.S. currency: nearly ever commodity, from gold to cotton, is bought and sold in U.S. dollars. With the dollar high, commodities, similar to U.S. exports, become more expensive. As commodity prices rise, demand decreases, and suppliers must correspondingly reduce prices to meet demand.

Finally, emerging economies may be crushed by the strong dollar. To attract investors to what may be a riskier investment, bond payments and interest rates in emerging markets are higher than in the United States. When the dollar strengthens, interest payments on bonds denominated in U.S. dollars become more expensive. As bond prices rise, emerging market debt becomes less attractive, and investors move to other, less costly markets. Although capital flight starts slowly, it can quickly spiral out of control.

Exhibit 5: Trade-weighted U.S. Dollar Index



[9] Bloomberg Business, "Citi: Here Comes a Global Recession," February 25, 2016, http://www.bloomberg.com/news/articles/20160225/citiherecomesaglobalrecession (accessed Feb. 26, 2016).
[10] Board of Governors of the Federal Reserve System, Trade-weighted U.S. Dollar Index, February 22, 2016, http://www.federalreserve.gov/pubs/bulletin/2005/winter05_index.pdf.

Source: Board of Governors of the Federal Reserve System, Trade-weighted U.S. Dollar Index, February 22, 2016, http://www.federalreserve.gov/pubs/bulletin/2005/winter05_index.pdf.

Consumer Spending

Over the last year, healthy consumer spending was a major driver of the economy and the 2.4 percent increase in GDP. GDP calculations include personal consumption expenditures (PCEs), investment, government purchases, and the balance of international trade (exports minus imports).

PCEs are the largest component of U.S. GDP, accounting for approximately 69 percent of spending in 2015 – in fact, 2.1 percent of the 2.4 percent growth in GDP was from PCEs alone. And, over the last several years, consumption has continued to increase: it grew by 3.1 percent in 2015, up from 2.7 percent in 2014 and 1.7 percent in 2013.[11]

Due to ongoing job creation and growing disposable income, CBER expects consumer spending to continue to bolster the economy, increasing by 3.0 percent in 2016.[12] Kiplinger's estimates are even higher, and project 3.5 percent growth.[13] The minutes of the U.S. Federal Open Market Committee meeting in January 2016 note positive expectations:

> Real PCEs appeared to have increased at a slower rate in the fourth quarter than in the previous quarter. . . . However, recent readings on key factors that influence consumer spending were generally favorable. Growth in real disposable income continued to be solid in November. Households' net worth was supported by further strong gains in home values through November . . . Also, consumer sentiment in the University of Michigan Surveys of Consumers remained at an elevated level in early January.[14]

The long-term outlook for consumer activity is similarly positive. Strong job gains, possible wage increases, modest inflation in consumer prices, increases in disposable income, and the rebounding housing market will likely boost purchases. While declining stock prices – the biggest drag on luxury spending – may suppress GDP growth somewhat, positives will likely outweigh negatives.

Unemployment

CBER expects U.S. unemployment to remain relatively unchanged. The unemployment rate was 5.0 percent in the 4th quarter of 2015; CBER projects unemployment to only decrease to 4.9 percent by the 4th quarter of 2016.[15] The Wall Street Journal, however, is somewhat more

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[11] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 12.
[12] Ibid., p. 10.
[13] Kiplinger, "Retail Sales to See Decent Growth in 2016," February 12, 2016, http://www.kiplinger.com/article/business/T019C000S010retailsalesconsumerspendingforecast.html (accessed Feb. 25, 2016).
[14] Minutes of the Federal Open Market Committee, January 26-27, 2016, p. 11.
[15] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 11.

optimistic: it expects unemployment to fall to 4.8 percent in June 2016, and decrease to 4.7 percent in December 2016.[16]

At the state level, CBER expects Tennessee's unemployment rate to decrease to 5.5 percent in 2016 and 5.4 percent in 2017 – the first time since 2007 that state unemployment will drop below 6 percent.[17]

While these number seem encouraging, CBER notes with caution the declining participation in the labor force and continued high numbers of discouraged workers. Low labor force participation contributes to a decreasing unemployment rate – fewer people in the workforce means fewer potentially unemployed workers.

At both the state and national levels, labor force participation has fallen. In 1996, the U.S. labor participation rate was 65.0 percent. By 2005, labor participation had dropped 0.5 percent to 64.5 percent. In 2015, however, the national rate was 61.3 percent, and is projected to decrease to nearly 60 percent by 2025. Within workers under 60, participation has dropped more significantly, from 75.6 percent in 1996 to 71.2 percent in 2015.[18]

Labor participation in Tennessee mirrors the decline at the national level: the rate was 62.0 percent in 2005, and fell to 57.7 percent in 2015. CBER expects the rate to decline further over the next 10 years, falling to 55.1 percent in 2025.[19]

In part, the decline of labor participation may stem from discouraged workers. Discouraged workers have stopped looking for work – therefore, they are no longer considered unemployed. Once the recession ended, many predicted that discouraged workers would return to the workforce. Despite the rebounding economy, many workers have remained discouraged and have not returned to the workforce as hoped, contributing to lower unemployment rates.

Thus, while many forecasts expect unemployment to decline – and to pre-2007 levels in Tennessee – CBER warns that decreasing rates are not entirely attributable to more workers finding jobs: high numbers of discouraged workers may keep the unemployment rate low.

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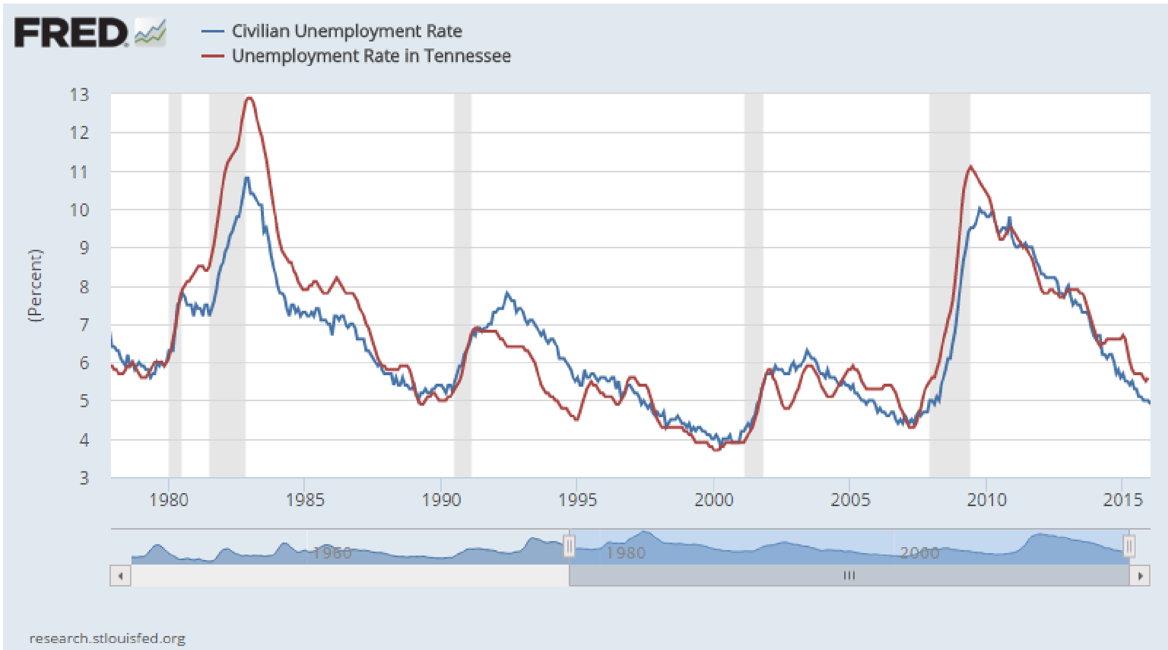
[16] Wall Street Journal, "What Forecasters Expect From the Economy in 2016," January 14, 2016, http://blogs.wsj.com/economics/2016/01/14/whatforecastersexpectfromtheeconomyin2016/ (accessed Feb. 25, 2016).
[17] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. ix.
[18] Ibid., pp. x and 9.
[19] Ibid., p. x.

Exhibit 6: U.S. and Tennessee Unemployment Rates



Source: Federal Reserve Bank of St. Louis, Civilian Unemployment Rates, https://research.stlouisfed.org.

Rising Interest Rates

The Federal Reserve is charged with two important but sometimes contradictory goals: maintaining both price stability and full employment. Price stability requires some minimal level of inflation and some yield of interest on savings – by keeping interest rates low, however, the Fed can stimulate demand.

In response to the Great Recession, the Federal Reserve set the federal funds rate at zero to encourage lending. The federal funds rate held at zero until December 2015, when the Fed finally raised the rate to 0.25 percent. The Fed is expected to continue raising the federal funds rate until it reaches a more normal level; CBER expects the rate to exceed 1.0 percent by the end of 2016.[20]

Many expected the Fed to increase the federal funds rate four more times in 2016. When recent market volatility hit, however, Bank of England Governor Mark Carney described the unwelcoming environment for higher interest rates in January 2016:

> Now is not yet the time to raise interest rates. The world is weaker and U.K. growth has slowed. Due to the oil-price collapse, inflation has fallen further and will likely remain very low for longer. Further downside risks to the global outlook remain, reflecting the

[20] Ibid., p. 8.

ongoing challenges in China, fragilities in other major market economies and the potential for contagion.[21]

Due to this recent volatility, some on Wall Street now believe the Fed will raise interest rates only twice in the next year. Traders estimate a 12 percent chance of a rate increase at the Fed's next policy-setting meeting in March, based on U.S. short-term interest-rate futures contracts.[22]

Inflation

Inflation has remained low over the past several years, partly due to decreases in both energy prices and non-energy exports.[23] As measured by the Consumer Price Index (CPI), the most popular measure of aggregate price levels, overall prices rose only 0.1 percent in 2015. In comparison, prices rose 1.6 percent and 1.5 percent in 2014 and 2013, respectively.[24]

To encourage wage increases and spending, the Fed's target range for inflation is 2.0 percent by 2018. CBER expects inflation to remain low in 2016, with projected price increases of 1.2 percent. While this increase is higher than 2015, it remains the second lowest in years following the Great Recession, after 2009.

By 2017, however, inflation may finally hit the Fed's target for the first time since 2012: CBER projects inflation at 2.6 percent.[25]

Federal Budget

The United States' debt is the largest in the world for a single country, and approaches the debt of the entire European Union.[26] For the last six years, U.S. federal debt has exceeded the country's GDP.[27] Growing national debt, along with increased taxes to service it, may crowd out private sector investment and hinder long-term economic growth. Additionally, high levels of debt restrict policymakers' spending options in the face of unexpected economic downturns.

Despite the grave situation, federal discretionary spending is expected to grow 3.6 percent in 2016, increasing to $1.2 trillion. This will contribute to deficit growth from $438.9 billion in 2015 to $500.5 billion in 2016. By the end of 2016, debt held by the public as a percentage of

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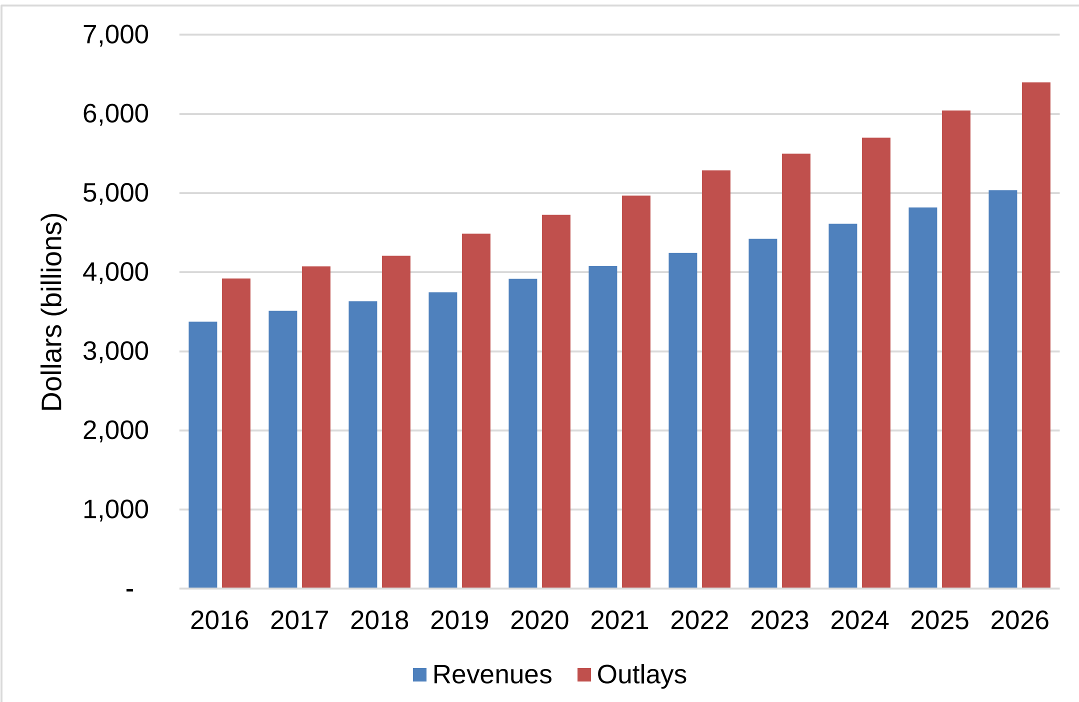
[21] Bloomberg View, "Four Fed Rate Increases in 2016? Its Peers Say No," January 21, 2016, http://www.bloombergview.com/articles/20160121/fourfedrateincreasesin2016itspeerssayno (accessed Mar. 2, 2016).
[22] Reuters, "Market view of next U.S. rate hike shifts into 2016 after jobs data," February 5, 2016, http://www.reuters.com/article/ususafedfuturesidUSKCN0VE1L3 (accessed Mar. 2, 2016).
[23] Minutes of the Federal Open Market Committee, January 26-27, 2016, p. 10.
[24] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 7.
[25] Ibid., p. 14
[26] About News, "The U.S. Debt and How It Got So Big," February 3, 2016, http://useconomy.about.com/od/fiscalpolicy/p/US_Debt.htm (accessed Mar. 3, 2016).
[27] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 13.

GDP will be the highest in American history since the years immediately following World War II.[28, 29]

While revenues are expected to increase by 4 percent, federal outlays are projected to rise by 6 percent. Increased expenditures will push the overall U.S. debt – the sum of the budget deficits – to $19.4 trillion.[30]

Given recent history and current spending, federal debt will likely continue to grow, absent a law change.

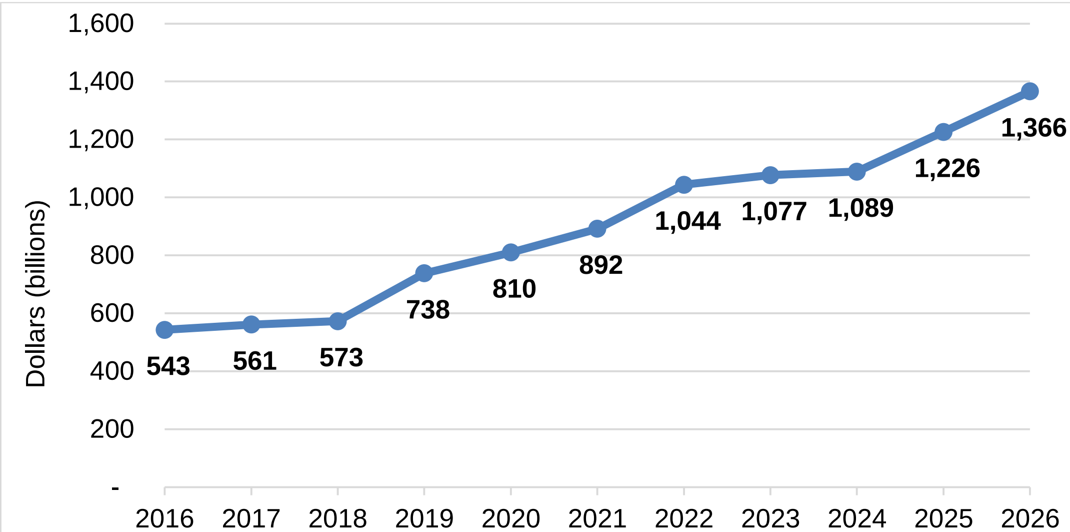
Exhibit 7: Projected Federal Revenues and Outlays: 2016-26



Source: Congressional Budget Office, *Summary of the Budget and Economic Outlook: 2016-2026,* January 16, 2016.

[28] Congressional Budget Office, *Summary of the Budget and Economic Outlook: 2016-2026,* January 16, 2016, p. 1.
[29] Matthew N. Murray et al., *An Economic Report to the Governor of the State of Tennessee: The State's Economic Outlook January 2016,* Center for Business and Economic Research, University of Tennessee, January 2016, p. 13.
[30] Ibid.

Exhibit 8: Projected Federal Deficit: 2016-26



Source: Congressional Budget Office, *Summary of the Budget and Economic Outlook: 2016-2026,* January 16, 2016.

Conclusion

Based on this review, the 2016 Economic Report's estimates fit within a range of projections from various economic forecasts. CBER's estimate of 4.9 percent nominal personal income growth for fiscal year 2016, 4.77 percent for calendar year 2016, and 4.67 percent for calendar year 2017 does not appear unreasonable.